

## ATENT COOPERATION TRE

**PCT** 

10/524896 RECTD 17 NOV 2004

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

-			nt's file reference	FOR FURTHER AC	TION See Notification	on of Transmittal of International camination Report (Form PCT/IPEA/41)	6)
P31612-PO							
International application No. PCT/JP 03/12800			•	International filing date (a 06.10.2003	lay/month/year)	Priority date (day/month/year) 17.10.2002	
Interr	ationa	Dator	at Classification (IPC) or be	l oth national classification ar	nd IPC		
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MA	rsus	HITA	ELECTRIC INDUST	RIAL CO., LTD. et al.			-
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4.	<ol> <li>This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</li> </ol>						
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2.	This	REPO	ORT consists of a total	of 5 sheets, including th	is cover sheet.		
	×	Tria i a		mind by ANNEVEC in	shooto of the decerial	tion, claims and/or drawings which	hovo
		beer	n amended and are the	basis for this report and/ n 607 of the Administrati	or sheets containing	rectifications made before this Aut	thority
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i	Thes	se anı	nexes consist of a total	of 4 sheets.			
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						- <del> </del>	
3.	This	repo	rt contains indications re	elating to the following ite	ems:		
	ı	$\boxtimes$	Basis of the opinion				
	11		Priority				
	111			opinion with regard to n	ovelty, inventive step	and industrial applicability	
	IV		Lack of unity of inven			,	
	٧	×	Reasoned statement		th regard to novelty,	inventive step or industrial applica	bility;
1	VI		Certain documents ci				
i	VII			international application	•		
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	VIII	Ц	Certain observations	on the international appl	ication		
Date	e of sul	bmissi	on of the demand		Date of completion of	this report	
23.04.2004				16.11.2004			
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International application No.

PCT/JP 03/12800

i.	<b>Basis</b>	of the	report
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1. With regard to the **elements** of the international application (Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)):

	Des	cription, Pages						
	1-10	, 12-32	as originally filed					
	11		received on 04.10.2004					
•	Clai	ms, Numbers						
	2-10		as originally filed					
	1	•	received on 12.07.2004					
	11		received on 04.10.2004					
	Dra	wings, Sheets						
	1/5-	5/5	as originally filed					
2.	With regard to the <b>language</b> , all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.							
	The	These elements were available or furnished to this Authority in the following language: , which is:						
		the language of a tra	nslation furnished for the purposes of the international search (under Rule 23.1(b)).					
		the language of publi	ication of the international application (under Rule 48.3(b)).					
		the language of a tra Rule 55.2 and/or 55.3	nslation furnished for the purposes of international preliminary examination (under 3).					
3.	Witi inte	h regard to any <b>nucle</b> rnational preliminary e	otide and/or amino acid sequence disclosed in the international application, the examination was carried out on the basis of the sequence listing:					
		contained in the inter	rnational application in written form.					
		filed together with the	e international application in computer readable form.					
		furnished subsequently to this Authority in written form.						
		furnished subsequently to this Authority in computer readable form.						
		The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.						
		The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.						
4.	. The	e amendments have r	resulted in the cancellation of:					
		the description,	pages:					
		the claims,	Nos.:					
		the drawings,	sheets:					

International application No.

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5. This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

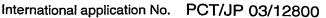
(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

- 6. Additional observations, if necessary:
- V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- 1. Statement

Novelty (N)	Yes: Claims No: Claims	1-11
Inventive step (IS)	Yes: Claims No: Claims	1-11
Industrial applicability (IA)	Yes: Claims No: Claims	1-11

2. Citations and explanations

see separate sheet



## Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Reference is made to the following document:

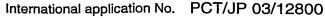
D1: EP-A-0 385 537 (PHILIPS NV) 5 September 1990 (1990-09-05)

2. The document D1 is regarded as being the closest prior art to the subject-matter of claim 1, and discloses (the references in parentheses applying to this document):

An optical disc drive comprising: a laser light source (L) for emitting a laser beam of which the intensity is changeable with the amount of drive current supplied thereto; a first photodetector (D1-D4), which receives a portion of the laser beam that has been emitted from the laser light source and then reflected from an optical disc (20), thereby generating a readout signal; a second photodetector (M), which receives another portion of the laser beam that has been emitted from the laser light source, generates an electric signal of which the level represents the power of the laser beam received, and outputs the electric signal as a light quantity detection signal; and a feedback control loop (40), which compares the level of the light quantity detection signal (MON) with a predetermined target value (MREF) and controls the amount of the drive current so that the level of the light quantity detection signal approaches the target value, wherein, the target value is changed so as to compensate for a variation of the sensitivity of the second photodetector (p 6 I 28-32), thereby controlling the power of the laser beam emitted from the laser light source (p 4 I 16-49: p 6 I 5-32; fig 1,2,4).

The subject-matter of claim 1 therefore differs from this known D1 in that: the target value is changed when reading data from the optical disc and further said variation of the sensitivity of the second photodetector being detected when a write power optimization is conducted.

The subject-matter of the present claim 1 provides thus an advantage over the prior art in that the compensation for a variation of the sensitivity of the second photodetector can be conducted during read write operation and not only under manual adjustment respectively the monitor sensitivity determining procedure disclosed in D1 (p 6 I 38-44).



The combination of features of claim 1 is neither disclosed nor rendered obvious by the available prior art.

The subject-matter of present claim 1 could be therefore considered as both novel and inventive (Art 33 (2) and (3) PCT).

This applies mutatis mutandis to claim 11 when replacing the feature "when a write power optimization is conducted" of claim 1 by the corresponding feature of claim 11: "while writing data to the optical disc".

Claims 2-10 are dependent on claim 1 and as such also meet the requirements of Э. the PCT with respect to novelty and inventive step.

## Additional remarks

- 1. Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the document D1 is not mentioned in the description, nor is this document identified therein.
- 2. Independent claims 1 and 11 are not in the two-part form in accordance with Rule 6.3(b) PCT, which in the present case would be appropriate, with those features known in combination from the prior art being placed in the preamble (Rule 6.3(b)(I) PCT) and with the remaining features being included in the characterising part (Rule 6.3(b)(ii) PCT).
- 3. The features of the claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).
- 4. Claim 11 contains the following feature "decreasing the target value as the sensitivity of the second photodetector decreases; and regulating the amount of the drive current such that the level of the light quantity detection signal approaches the decreased target value while reading the data from the optical disc" which appears to correspond by its scope to the following feature of claim 1 "in reading data from the optical disc, the target value is changed so as to compensate for a variation of the sensitivity of the second photodetector".

To reinforce unity the same terms designating the same features should be used.

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drive current supplied thereto. The first photodetector preferably receives a portion of the laser beam that has been emitted from the laser light source and then reflected from an optical disc, thereby generating a readout signal. The second photodetector preferably receives another portion of the laser beam that has been emitted from the laser light source, generates an electric signal of which the level represents the power of the laser beam received, and outputs the electric signal as a light quantity detection signal. The feedback control loop preferably compares the level of the light quantity detection signal with a predetermined target value and preferably controls the amount of the drive current so that the level of the light quantity detection signal approaches the target value. The driving method preferably includes the steps of: sensing a decrease in the sensitivity of the second photodetector while reading data from the optical disc; decreasing the target value as the sensitivity of the second photodetector decreases; and regulating the amount of the drive current such that the level of the light quantity detection signal approaches the decreased target value while reading the data from the optical disc, thereby controlling the power of the laser beam emitted from the laser light source.

Other features, elements, processes, steps, characteristics and advantages of the present invention will become more apparent from the following detailed description of preferred embodiments of the present

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1. An optical disc drive comprising:

a laser light source for emitting a laser beam of which the intensity is changeable with the amount of drive current supplied thereto;

a first photodetector, which receives a portion of the laser beam that has been emitted from the laser light source and then reflected from an optical disc, thereby generating a readout signal;

a second photodetector, which receives another portion of the laser beam that has been emitted from the laser light source, generates an electric signal of which the level represents the power of the laser beam received, and outputs the electric signal as a light quantity detection signal; and

a feedback control loop, which compares the level of the light quantity detection signal with a predetermined target value and controls the amount of the drive current so that the level of the light quantity detection signal approaches the target value,

wherein in reading data from the optical disc, the target value is changed so as to compensate for a variation of the sensitivity of the second photodetector, thereby controlling the power of the laser beam emitted from the laser light source.

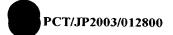


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wherein the corrected target value is used in reading the data from the optical disc.

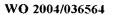
10. The optical disc drive of claim 9, further comprising:

decision means for obtaining a timer upper limit value using the value stored on the memory element to represent the difference; and

a timer, which keeps counting until its count reaches the timer upper limit value,

wherein when the count of the timer reaches the timer upper limit value, the value stored on the memory element to represent the difference is updated into a new value.

11. A method for driving an optical disc drive that includes a laser light source, a first photodetector, a second photodetector and a feedback control loop, wherein the laser light source emits a laser beam of which the intensity is changeable with the amount of drive current supplied thereto; the first photodetector receives a portion of the laser beam that has been emitted from the laser light source and then reflected from an optical disc, thereby generating a readout signal; the second photodetector receives another portion of the laser beam that has been emitted from the laser light source, generates an electric





signal of which the level represents the power of the laser beam received, and outputs the electric signal as a light quantity detection signal; and the feedback control loop compares the level of the light quantity detection signal with a predetermined target value and controls the amount of the drive current so that the level of the light quantity detection signal approaches the target value,

the method comprising the steps of:

sensing a decrease in the sensitivity of the second photodetector while reading data from the optical disc;

decreasing the target value as the sensitivity of the second photodetector decreases; and

regulating the amount of the drive current such that the level of the light quantity detection signal approaches the decreased target value while reading the data from the optical disc, thereby controlling the power of the laser beam emitted from the laser light source.